Name:_____ Date:_____

A2&T: Introduction to Functions

DO NOW

Solve, and express the answer in set builder, and interval notation: $x^2 - 13x > 48$

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1) A relation is a set of unique _____. Here are a few examples:

{(1, 5) (3, 2) (8, 8) (1, 4) (7, 19.4)} {(1, a) (2, b) (3, c) (4, d) (5, e)}

{(3.2, -90) (pizza, 435) (-2.9, dishwasher) (a, A)} {(0, 0)}

2) A function is a special relation where the _____ **do not repeat**. Determine whether each of the following is a function:

{(A, 1) (B, 2) (C, 3) (D, 4) (E, 5)} {(9, 0.2) (33, -77) (4, -2,) (0, 0) (8, 9)}

{(1, 3) (2, 3) (9, 3) (-12, 3) (b, 3)} {(0.2, -67) (3, h) (red, 5) (23, 9.1) (0.2, 55)}

3) There are **several ways** to describe/think about functions.

a] A function is a special relation whose x-values do not repeat, but the y values can repeat.

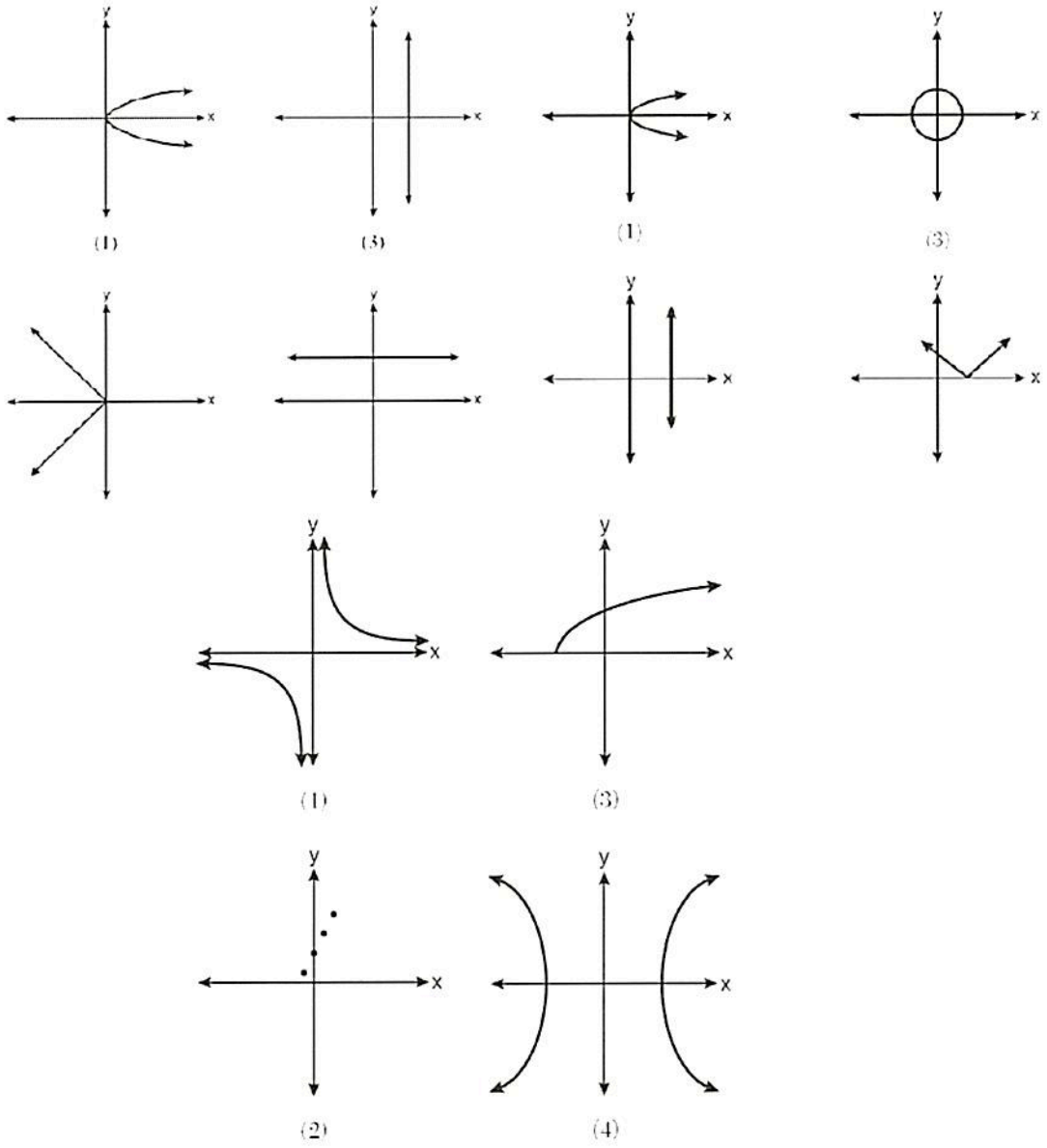
b] A function is a rule which assigns every x value **one, and only one** y value.

c] The graph of a function will pass the "vertical line test".

What is the vertical line test?

4) The Vertical Line Test: Since the x values are not allowed to repeat, no vertical line should ever hit the graph of a function more than once.

*5) Determine whether each of the following represents a function:



6) A function is called one-to-one if it's y values **do not repeat**.

*That means that a **one-to-one** function has no repeating _____ or _____ values.

*That means that a **one-to-one** function will pass both the _____ test,

and the _____ test.

7) Determine whether each of the following functions is **one-to-one**:

8) A function is called onto if it uses every y value that it is entitled to.

9) Determine whether each of the following functions is **onto**:

10) Can you summarize the main points from today?

A] A relation is a set of unique _____.

B] A function is a relation whose _____ values do not repeat.

Functions pass the _____ test.

C] A function is one-to-one if its _____ values do not repeat.

One-to-one functions also pass the _____ test.

D] A function is called onto if it uses all of the y values that it can.

11) Determine whether each of the following represents a function:

a] {(9, 2) (2 ,2) (3, 5) (-6, -6) (a, h)}

b] {(11, 3) (3, 11) (0, 0) (b, b) (G, g)}

c] {(sony, playstation) (Nintendo, wii) (Nintendo DS) (Xbox, 360)}

d] {(-4, 2) (0.2, 5) (3/5, 5/4) (a, m) (-4, 7)}

12) Determine whether each of the following represents a **one-to-one** function:

a] {(4, 3) (2, 6) (8, 3) (3, h) (0, d)}

b] {(a, 1) (b, 2) (c, 3) (d, 4) (e, 5)}

c] {(0, 0) (1, 1) (2, 2) (3, 3) (4, 4)}

d] {(a, 5) (5, 2) (7, s) (h, k) (7, 5)}

13) Define each of the following:

Function:

one-to-one:

onto:

14) Everyone has a favorite color. Explain why this models a function.

15) If Sammi had **two** favorite colors, would the "favorite color" scenario still be a function? Explain.

16) Why is the "favorite color" scenario **not** necessarily a **one-to-one** function?

17) Why is the "favorite color" scenario **not** necessarily an **onto** function?